Whole body computed tomography during trauma resuscitation—Effect on survival

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Introduction: An increasing number of trauma centres uses whole body computed tomography (WBCT) as a diagnostic tool for the early, primary trauma survey. There is no evidence to date suggesting that use of WBCT has a significant effect on the outcome of major trauma patients.
Methods: In a retrospective, multicentre study we compared the probability of survival (Ps) in those blunt trauma patients who received WBCT during resuscitation to those who did not. Using data derived from the Trauma Registry of the German Trauma Society, we determined the Ps according to the trauma and injury severity score (TRISS), the revised injury severity classification score (RISC) and the standardized mortality ratio (SMR, observed/expected mortality).
Results: 1494 (32.3%) of the identified 4621 patients received WBCT. The mean age was 42.6 years, 72.8% were male and mean ISS was 29.7. SMR calculated by TRISS was 0.745 (CI95% 0.633–0.859) for the WBCT vs. 1.023 (CI95% 0.909–1.137) for the non-WBCT group ($p < 0.001$). RISC-score calculation revealed a SMR of 0.865 (CI95% 0.774–0.956) for the WBCT vs. 1.034 (CI95% 0.959–1.109) for the non-WBCT group ($p = 0.017$), respectively. This means that the observed mortality rates in the WBCT-group are significantly lower than predicted by the TRISS/RISC. Multivariate adjustment for hospital level, year of trauma and potential centre effects confirmed that WBCT is an independent predictor for survival ($p \leq 0.002$). The "number needed to scan" is 17 based on TRISS and 32 based on RISC calculation.
Discussion: Integration of WBCT into early trauma care significantly increases the P_s of polytrauma patients. The relative reduction of the mortality rate based on the TRISS is 25% (CI95% 14–37%) and 13% (CI95% 4–23%) based on the RISC. Despite potentially harmful effects of increased radiation exposure WBCT is recommended as a standard diagnostic tool during early resuscitation phase of polytrauma patients (Lancet, in press).
Keywords: Whole body computed tomography; Polytrauma; Outcome; Resuscitation

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6B.3

Influence of proanthocyanidin on blunt traumatized lungs after mustard gas exposure (battle imitated environment)

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Chemical agents are used to amplify the injurious power of the destroying weapons. Because of its significant effects on respiratory system, chemical warfare is extremely relevant to trauma-dealing medical staff too. The objective of the present study was to investigate the role of oxidative stress status in blunt chest trauma coexisting mustard toxicity and to determine the protective effect of proanthocyanidine.

In this study, animals were divided into four groups and each group contained fifteen rats. The first one was the control group (CG). The second one was the proanthocyanidin group (PCG). Vapourized 5 ml distilled water was applied to CG and PCG for to blunt chest trauma and then to a toxic dose of NM. The fourth group (TNMPCG) was subjected to blunt chest trauma and NM and besides PC was administrated as in the second group. All of the rats were sacrificed after 72 h and lungs were removed immediately. Two samples were taken from the lungs, one of which was fixed in 2.5% buffered glutaraldehyde for histopathological examination and the other was kept in liquid nitrogen for histochemical analysis. Superoxide dismutase (SOD), glutathion peroxidase (GSH-Px), catalase (CAT), malonedialdehyde (MDA) was measured from the histochemical samples.

Light micrographs of the PCG were normal in appearance, similar to the CG findings. Furthermore, light micrographs of the TNMPCG were normal in appearance, similar to the CG findings, too. MDA levels, CAT and GSH-Px activities in PCG were similar to CG. NM direct exposure caused increased MDA levels, and decreased GSH-Px and SOD activity significantly in lung tissue. PC treatment decreased MDA levels, but CAT and GSH-Px activities were similar to those of TNMG group.

These findings can imply that the structural changes induced by blunt traumatized lungs after mustard gas exposure can be partially prevented and restored by PC treatment.
Keywords: Blunt chest trauma; Chemical warfare agent; Pulmonary contusion; Proanthocyanidin

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6B.4

Developing a spinal clearance protocol for unconscious paediatric trauma patients

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Introduction: Spinal injury in paediatric trauma is associated with significant morbidity and mortality. An increasing evidence base has allowed consensus on effective methods of spinal clearance in the adult and the low-risk paediatric patient. No such literature exists for the high-risk paediatric trauma patient.
Methods: A retrospective study of 115 consecutive children with major trauma admitted to the Paediatric Intensive Care Unit of a UK trauma unit between January 2000 and December 2006 was performed. Data was collated from medical charts, intensive care records, and hospital administration and imaging systems, on spinal imaging and methods of spinal clearance.
Results: The patients in the study were predominantly male (63%) and injured in a road traffic accident (63.5%). Ten patients (8.7%) were identified with spinal injuries, all of whom had sustained closed head injuries. Two of these patients had spinal cord injuries. Patients with spinal injuries had longer intubation times and intensive care stays, but no differences in New Injury Severity Score or outcome. Clearance methods ranged from clinical examination to plain radiographs, computed tomography (CT), and dynamic screening. CT demonstrated 100% specificity and sensitivity with positive and negative predictive values of 1 for all spinal regions. There were no cases of Spinal Cord Injury WithOut Radiological Abnormality (SCIWORA) and no missed injuries. Magnetic Resonance Imaging (MRI) was used in the presence of neurological abnormality only.
Discussion: This study will contribute to the development of an evidenced-based protocol for the clearance of the spine in the obtunded high-risk paediatric trauma patient. All spine regions must be imaged and have formal documented clearance. High resolution CT with sagittal and coronal reconstructions, interpreted by